

## REMARKS/ARGUMENTS

The following remarks are responsive to the Office Action mailed on January 23, 2008. Reconsideration of the instant application in view of the following remarks is respectfully requested.

Claims 1-4 and 21-33 are pending. Claims 1-4 and 21-33 are rejected.

### Rejection under 35 USC §102

Claims 1, 3-4, 22-23 and 25 are rejected as being anticipated by Goldstein et al, "Sulfone Formation during the Sulfonation of Crosslinked Polystyrene," Ion Exchange and Membrane, 1972, Vol. 1, pp.63-66. The Examiner asserts on page 3 of the rejection that "[s]ince the disclosure of Goldstein et al meets the requirements of the present claims both in terms of the types of materials added and their contents, it is reasonable to presume that the product of Goldstein would fulfill the same utility of catalyst as presently claimed..." This assertion is false because Goldstein does not disclose each of Applicant's claimed elements, namely creating sulfone bridges by using oleum.

To sustain a rejection based upon novelty, one reference must disclose each of applicants' claimed elements. Here, Applicants' claim 1 requires a catalyst containing 0.1 to 1.0 millimole sulfone groups per gram dry catalyst produced by an oleum sulfonating agent. Goldstein fails to disclose a sulfonation product produced with oleum that also contains sulfone bridge groups. In the last sentence of the preamble of the reference, Goldstein states that "when using oleum ... in a medium consisting of nitromethane and methyl chloride, it could be shown that no sulfone bridge whatever formed." Furthermore, on page 64, col. 2 of Goldstein, when oleum is used for sulfonation, Goldstein states that the resulting product "lead[s] to a homogeneous sulfonation product free of sulfone bridges."

Thus, by failing to disclose a sulfonated catalyst product produced with oleum having 0.1 to 1.0 millimoles of sulfone bridging groups Goldstein fails to meet the burden of disclosing each of Applicants' claim 1 limitations. Claims 3-4, 22-23 and 25 depend from an allowable base claim and therefore should be allowed. Applicant's request that the rejection of the claims be withdrawn.

Rejections under 35 USC §102/103

The Examiner rejected claims 2, 24, and 26-33 under 35 USC §102/103 as being unpatentable over Goldstein. Applicants respectfully disagree.

Applicants have presently amended the claims to clarify the invention. As aforementioned, the instant invention is patentably distinct from Goldstein because the catalyst of the present invention as claimed in claims 2, 24 and 26-33 must contain 0.1 to 1.0 mmol sulfone bridging groups per gram dry catalyst. Goldstein neither discloses, teaches, nor suggests this requirement of 0.1 to 1.0 mmol sulfone bridging groups per gram dry catalyst. In fact Goldstein teaches away from the formation of sulfone bridging groups when using oleum to sulfonate. Goldstein asserts that when oleum is used, no sulfone bridging groups are formed. One of ordinary skill in the art would not be motivated by Goldstein to sulfonate with oleum in order to form sulfone bridge groups. Moreover, as Applicants argued in the appeal brief filed on 12/26/2007, it is the sulfonation with oleum that produces the claimed combination of range of sulfone bridging groups and range of acid capacity. This necessary combination results in a catalyst product that has increased resistance to defomation under pressure. Here Goldstein's product is not structurally the same as Applicant's and thus would not perform in the same manner.

Furthermore, the other sulfonation techniques disclosed in Goldstein do not produce a catalyst product having the required acid capacity and sulfone bridging combination of the claimed invention. As applicants stated

in the Specification on page 8, paragraph 3, "[t]he sulfonation of aromatic compounds, either monomeric or polymeric, taught heretofore with chlorosulfonic acid, [as disclosed in Goldstein] or sulfur trioxide inherently lead to the formation of some sulfone linkages. It is known that sulfone bridges result from the electrophilic attack of "pyrosulfonic acid" intermediates upon unreacted aromatic rings; these intermediates are, in turn, formed by the reaction of a sulfonic acid with  $\text{SO}_3$  (W. H. C. Ruegeberg, T. W. Sauls, and S. L. Norwood, J. Org. Chem., 20, 455, 1955). We, [applicants] have found that by adjusting the concentration of the sulfuric acid / $\text{SO}_3$  mixture, that the number of sulfone bridges can be controlled. It is preferred that sulfuric acid/ $\text{SO}_3$  mixtures, also known as oleum, having acid concentrations of between 101.0% and 104.5% (20% oleum contains 20% by weight of  $\text{SO}_3$  in 100% sulfuric acid, for a final acid concentration of 104.5%) be used as the sulfonating agents to introduce both sulfone bridging groups and at least one sulfonic acid group per aromatic nucleus." Again, given the fact that Goldstein stated that no sulfone bridges are formed with oleum, one would not be motivated by Goldstein to produce the catalyst of the instantly claimed invention.

Applicants assert that Claims 2, 24, and 26-33 are in condition for allowance and respectfully requests that the Examiner withdraw the rejection with respect to these claims.

#### Rejections under 35 USC § 103

Claim 21 is rejected as failing being unpatentable over Goldstein in view of Lundquist, US005233096A. For the reasons argued above, claim 21 should be allowed as well. This rejection should not be maintained because of the deficiencies in the teachings of Goldstein. Claim 21 is a dependent claim that adds further limitations upon an allowable base claim and therefore should be allowed.

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CONCLUSION

In view of the above Amendments and Remarks, Applicants believe that the pending claims, Claims 1-4 and 21-33 are in condition for allowance and Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Applicants hereby authorize the Commissioner to charge any fees which may be required or credit for overpayment for entry of this Amendment to Deposit Account No. 18-1850.

Respectfully submitted,



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